
Stem cells improve brain function after radiation therapy

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CIRM grantees at University of California Irvine have used human neural stem cells to help alleviate brain damage that occurs after radiation to treat brain tumors.

Radiation can be an effective way of treating tumors in the brain, but the radiation also kills surrounding healthy tissue in addition to the destroying the tumor. Even if the cancer is eliminated the person can be left with debilitating learning and memory loss. A press release from UCI quotes senior author on the work Charles Limoli, who has a CIRM SEED award to carry out this work:

“In almost every instance, people experience severe cognitive impairment that's progressive and debilitating,” Limoli said. “Pediatric cancer patients can experience a drop of up to three IQ points per year.”

Limoli and his team wanted to know if the brain's stem cells could repair that damage. They injected human neural stem cells into the brains of rats that had undergone radiation treatment. Those stem cells migrated to the damaged part of the brain and matured into nerves and the brain's support cells. The release quotes Limoli:

“This research suggests that stem cell therapies may one day be implemented in the clinic to provide relief to patients suffering from cognitive impairments incurred as a result of their cancer treatments,” Limoli said. “While much work remains, a clinical trial analyzing the safety of such approaches may be possible within a few years, most likely with patients afflicted with glioblastoma multiforme, a particularly aggressive and deadly form of brain cancer.”

If their work is successful, this technique could help people live normal lives after being treated for brain cancers. That would be good news for individuals, their caregivers and for the state, which loses tax income when people are unable to work or must decrease work to care for family members.

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